

SUMMARY OF THE 2002 FIELD BURNING SEASON

Prepared By

**The Oregon Department of Agriculture
Natural Resources Division
Smoke Management Program**

Introduction

This summary is developed at the end of each field burning season and is used to report season conditions as well as the amount of acreage registered and burned.

Weather Summary

From a weather standpoint it was a challenging open field burning season. Extreme heat in the desert southwest enhanced the typical thermal trough in central California and increased the number of days with north winds in the valley. Patience prevailed and there were enough days with good burn conditions to allow for normal amounts of acreage to be burned. June was characterized with above-average temperatures and below-average precipitation in Oregon. July was a very dry month (even considering that July is the driest month of the year statewide) and rather warm. July temperatures in Salem were 2.7F warmer than long-term averages for the month. Dry lightning set numerous fires in southern and eastern Oregon. August was another dry month with generally "average" temperatures. Lightning-caused fires continued in southern and eastern portions of the state. Weak "El Niño" conditions continued in the Pacific. September was a mild, sunny, generally dry month in most of Oregon.

Acreage Registered and Open Field Burned

The 2002 burn season marked the fifth year of the last step of the acreage phase down instituted by the 1991 Legislature, with 40,000 acres allowed to be open field burned and another 25,000 acres available for steep terrain and identified species. Research has identified some species of grass seed that cannot be profitably produced without thermal sanitation. Also, there are areas in the Willamette Valley where it is extremely difficult to apply alternatives to open field burning because of a lack of available equipment that can be used on steep terrain.

Open Field Burning

In the 2002 burn season 79,679 acres were registered for open field burning compared to 79,756 acres in 2001. Registration included 61,140 acres of regular open field burning, 567 acres of steep terrain, and 17,972 acres of identified species. Growers exceeded the regular limitation of 40,000 acres, therefore, the regular open field burning allocation rate

for 2002 was 67%. The allocation rate for identified species and steep terrain for 2002 was 100%.

A total of 51,374 acres were open field burned during the 2002 burn season (35,121 regular limitation, 437 steep terrain, and 15,816 identified species). By comparison, a total of 52,934 acres were burned in 2001, 50,801 acres in 2000, 49,999 acres in 1999, and 46,299 acres in 1998.

Overall, open field burning was concentrated into fewer days. There were 14 open field burning days authorized in 2002 in which more than 300 acres were open field burned on any given day. This compares to 18 days in 2001, 17 days in 2000, 19 days in 1999, and 21 days in 1998. During 2002, an average of approximately 3,489 acres were open field burned each authorized day. That compares with 2,787 acres per day in 2001, 2,726 acres per day in 2000, 2,303 acres per day in 1999, and 2,205 acres per day in 1998.

2002 Open Field Burn Crop

Species	Burned	% of Total
Annual Ryegrass	27,244	53.03%
Chewings Fescue	7,575	14.75%
Creeping Red Fescue	5,933	11.55%
Perennial Ryegrass	4,692	9.13%
Tall Fescue	1,393	2.71%
Highland Bentgrass	2,308	4.49%
Cereal Grain	1,721	3.35%
Orchardgrass	110	0.22%
Fine Fescue	350	0.68%
Kentucky Bluegrass	48	0.09%
Total	51,374	100%

Propane Flaming

The maximum allowable acreage to be propane flamed is 37,500 acres (as set by the 1995 Legislature). In 2002, growers registered 2,606 acres (6.9%) of the allowable acreage for propane flaming and burned 1,582 acres (4.2%) of the limitation. This compares to 2,965 acres (7.9%) registered and 1,627 acres (4.3%) burned in 2001, 2,875 acres (7.6%) registered and 2,124 acres (5.6%) burned in 2000, 3,575 acres (9.5%) registered and 1,939 acres (5.1%) burned in 1999, and 6,494 acres (17.3%) registered and 4,033 acres (10.7%) burned in 1998.

2002 Propane Flame Burn Crop

Species	Burned	% of Total
Perennial Ryegrass	714	45.13%
Tall Fescue	330	20.86%
Annual Ryegrass	146	9.23%
Creeping Red Fescue	65	4.11%
Highland Bentgrass	224	14.16%
Kentucky Bluegrass	31	1.96%
Orchardgrass	9	0.57%
Cereal	63	3.98%
Total	1582	100%

Stack Burning

Stack burning does not have an imposed acreage limitation nor is registration required. Growers are obliged to secure a stack burning permit containing the responsible party's name, location of the burn, and acreage represented by the accumulated residue prior to ignition. For the 2002 season, growers stack burned 1,018 acres. Previous years are as follows:

Year	Interim – Oct. 27th	Final – March 31st
1997/98	4,310	7,628
1998/99	4,116	5,021
1999/00	3,120	3,825
2000/01	921	1,050
2001/02	691	1,309
2002/03	616	1,018

Total Annual Thermal Sanitation

Burn Type	2002	2001	2000	1999	1998
Open Field Burning	51,374	52,934	50,801	49,999	46,299
Propane Flaming	1,582	1,627	2,124	1,939	4,033
Stack Burning	1,018	1,309	1,050	3,825	5,021
Total Sanitation	53,974	55,870	53,975	55,763	55,353
Percent Change	-03%	+03%	-03%	+01%	-21%

Enforcement

The 2002 burn season marked the sixth year that the department has performed the enforcement function of the Smoke Management Program (as stipulated under a Memorandum of Understanding with the Department of Environmental Quality, pursuant to Oregon Revised Statutes 468A.585).

There were 11 enforcement contacts during the 2002 season, resulting in 13 violations. This compares with 10 contacts during the 2001 season, resulting in 14 violations, three contacts during the 2000 season, resulting in five violations, four contacts during the 1999 season, resulting in four violations, and 26 contacts during the 1998 season, resulting in 26 violations.

After evaluating the factors involved in each case during the 2002 season, there were five informal warnings issued, for four flagging issues and one improper preparatory burn. One notice of noncompliance was issued for an improper training fire. Seven civil penalty assessments are pending review by the director.

Smoke Impacts and Complaints

In general, smoke intrusions into populated areas result from a simple unexpected shift in winds, or from a combination of meteorological factors, which have the effect of reducing both vertical rise and horizontal dispersion of smoke. This may occur when the atmosphere is becoming more stable, such as after the passage of a storm front or an upper level trough, which is not always easily observed. When this happens, the mixing height of the atmosphere (altitude to which smoke will freely rise) lowers, sometimes trapping smoke below. Wind speeds at the transport level may drop off dramatically, often with no sustained direction, allowing smoke from three or four thousand feet to mix

back to the surface. This often occurs 10 to 20 miles downwind from open field burning areas and can be aggravated by differential heating, turbulence, and channeling that develops along the Cascade foothills.

The intrusions in 2002 occurred on 9 days, compared to 21 days in 2001, eight days in 2000, six days in 1999, and six days in 1998. The number of hours of significant* smoke impact in cities monitored for smoke in 2002 were: Lyons (3 hours) and Sweet Home (5 hours). Light** smoke impact occurred in Lyons (11 hours), Sweet Home (16 hours), and Springfield (1 hour). Portland, Salem, Eugene, Oregon City and Corvallis recorded no days of smoke impact.

Open field burning complaints received from Willamette Valley residents by the Smoke Management Program totaled 705 for the 2002 season. That compares to 608 complaints in 2001, 477 complaints in 2000, 249 complaints in 1999, and 282 complaints in 1998.

The high number of open field burning complaints this season is attributed to persistent northerly winds and burning too far south in Linn County on a northwest wind on the 29th of August (193 complaint calls were received on this day). Another contributing factor was the number of wildfires in southern and eastern Oregon.

Starting in the 2002 season, the Oregon Department of Agriculture (ODA) started tracking the number of complaint calls by individuals to determine the amount of repeat callers. Names of callers are recorded in order to prevent the results from being skewed by multiple calls by one individual. In addition to the numbers shown below, 23 anonymous calls were received.

Breakdown of Open Field Burning Complaint Calls

Calls Received	Number of Individuals
1	448
2	51
3	12
4	8
5	3
6	3
31	1

Significant hours of smoke impact are defined as resulting in hourly nephelometer measurements exceeding 1.8 X 10⁻⁴ B scat above the prior 3-hour background.

Light hours of smoke impact are defined as resulting in hourly nephelometer measurements exceeding 1.0 X 10⁻⁴ B-scat above the prior 3-hour background.

2002 Comparative Annual Open Field Burning Data

	2002	2001	2000	1999	1998
Acres Registered	79,679	79,756	76,561	75,382	80,630
Acres Burned	51,374	52,934	50,801	49,999	46,299
Most burned in one day	9,994	7,958	10,391	7,217	8,157
Burn days accounting for 75% of total acres	6	9	6	9	9
Weekend burn days allowed	0/30	0/28	0/26	0/24	0/22
Number of Burn Days					
300 – 1,000 acres	2	5	8	7	12
1,000 – 5,000 acres	8	10	6	9	7
5,000 – 10,000 acres	4	3	2	3	2
10,000 or greater	0	0	1	0	0
Total Burn Days	14	18	17	19	21
Smoke Impact Hours *total/heavy/mod./light (#days)					
Portland	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0
Salem	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0
Corvallis	0/0/0/0	0/0/0/0	0/0/0/0	0/0/0/0	0/0
Lyons	3/0/3/11(4)	11/0/11/56(17)	4/0/4/5(5)	5/0/5/0(3)	7/1(4)
Sweet Home	5/0/5/16(4)	2/0/2/5(3)	5/0/5/2(3)	4/1/2/0(1)	9/1(2)
Eugene	0/0/0/0	0/0/0/0	0/0/0/0	2/0/0/2(1)	0/0
Springfield	0/0/0/1(1)	0/0/0/0	0/0/0/0	2/0/0/2(1)	0/0
Oregon City	0/0/0/0	2/0/2/2(1)	0/0/0/0	0/0/0/0	0/0
Total	8/0/8/28(9)	15/0/15/63(21)	9/0/9/7(8)	13/1/7/4(6)	16/2(6)
Smoke Complaints Open Field Burning					
Portland/Salem	4	31	33	3	9
Albany/Corvallis	10	11	18	4	7
Lebanon/Sweet Home	23	55	75	45	57
Eugene/Springfield	382	274	239	144	54
Other (North Valley)	83	112	47	18	36
Other (South Valley)	174	125	65	35	119
Unspecified Area	29	N/A	N/A	N/A	N/A
Total Complaints	705	608	477	249	282

*Total includes hourly nephelometer measurements exceeding 1.8×10^{-4} B-scat above prior 3-hour background; equivalent to visual range of 12 miles or less.

“Heavy” hours are 5.0×10^{-4} B-scat or more above background; equivalent to visual range of 5 miles or less. (One hour of heavy smoke impact is equal to two hours of moderate smoke impact.)

“Moderate” hours of smoke impact are defined as resulting in hourly nephelometer measurements exceeding 1.8×10^{-4} B-scat above the prior 3-hour background; equivalent to visual range of 12 miles or less.

“Light” hours of smoke impact are defined as resulting in hourly nephelometer measurements exceeding 1.0×10^{-4} B-scat above the prior 3-hour background. “Light” hours of smoke impact were not recorded prior to the 1999 season.

**Open Field Burning Complaints and
Wind Direction Correlation (over 300 acres)**

Date	Location	Acres	Wind Direction	F/P/S/G*	Smoke Impact Hours **total/heavy/mod./light
7/18	Marion, Linn	1,169	SW	3//0/0/0	
7/30	Marion, Linn, Lane, Clackamas	2,445	NNW	5/0/0/0	
8/1	Marion, Lane, Clackamas	1,731	NW	23/0/0/0	Lyons 0/0/0/3
8/5	Marion, Linn, Lane, Clackamas	9,994	SW	22/0/0/0	Sweet Home 3/0/3/1
8/7	Marion, Linn, Lane, Clackamas	449	N	16/0/0/0	
8/19	Marion, Linn, Clackamas	7,792	NW	74/0/0/3	Lyons 1/0/1/2
8/26	Marion, Linn, Lane, Clackamas	1,224	N	5/0/0/0	Sweet Home 1/0/1/13
8/27	Marion, Linn, Yamhill, Benton, Clackamas	936	NE	86/0/0/0	
8/29	Marion, Linn, Clackamas, Benton	8,408	NW	193/0/0/0	Lyons 2/0/2/2 Sweet Home 1/0/1/1 Springfield 0/0/0/1
9/3	Marion, Linn, Clackamas	2,055	NW	59/0/0/0	
9/4	Marion, Linn	6,421	NW	42/0/0/0	Lyons 0/0/0/4 Sweet Home 0/0/0/1
9/5	Marion, Linn, Clackamas	3,908	W	24/0/0/0	
9/6	Marion, Linn	1,280	W	8/0/0/0	
9/26	Marion, Linn	1,038	W	2/0/0/0	

*F/P/S/G are complaints pertaining to open field burning/propane flaming/stack burning/general air quality.

**Total includes hourly nephelometer measurements exceeding 1.8×10^{-4} B-scat above prior 3-hour background; equivalent to visual range of 12 miles or less.

“Heavy” hours are 5.0×10^{-4} B-scat or more above background; equivalent to visual range 5 of miles or less. (One hour of heavy smoke impact is equal to two hours of moderate smoke impact.)

“Moderate” hours of smoke impact are defined as resulting in hourly nephelometer measurements exceeding 1.8×10^{-4} B-scat above the 3-hour background; equivalent to visual range of 12 miles or less.

”Light” hours of smoke impact are defined as resulting in hourly nephelometer measurements exceeding 1.0×10^{-4} B-scat above the prior 3-hour background. “Light” hours of smoke impact were not recorded prior to the 1999 season.